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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/069,826	04/11/2002	Martin Drechsler	AZ.2968	5365

7590 07/16/2003

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EXAMINER

SMOOT, STEPHEN W

ART UNIT	PAPER NUMBER
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2813

DATE MAILED: 07/16/2003

12

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No. 10/069,826	Applicant(s) DRECHSLER ET AL.	
	Examiner Stephen W. Smoot	Art Unit 2813	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 05 November 2001.
- 2a) ☐ This action is FINAL.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 20-39 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 20-39 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 November 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

### Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All    b) ☐ Some \*    c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                   | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____  |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                          | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>11</u> . | 6) <input type="checkbox"/> Other: _____                                    |

## **DETAILED ACTION**

This Office action is in response to application papers filed on 05 November 2001.

### ***Specification***

1. This application does not contain an abstract of the disclosure as required by 37 CFR 1.72(b). An abstract on a separate sheet is required.

2. The disclosure is objected to because of the following informalities:

On page 9, line 13, change "2f" to --2e-- because the drawings do not include a Fig. 2f and Fig. 2f is not described elsewhere in the specification; and

On page 14, line 20, change "composition" to --decomposition-- because  $T_H$  corresponds to the decomposition temperature (see page 12, line 15).

Appropriate correction is required.

### ***Claim Objections***

3. Claims 23, 34, 35, 36, 38 are objected to because of the following informalities:

In claim 23, line 1, insert --are-- after "steps" to correct grammar;

In claim 34, line 1, insert --said-- after "wherein" to particularly point out that the at least one layer is the at least one layer from claim 20;

In claim 35, line 1, insert --said-- after "wherein" to particularly point out that the at least one layer is the at least one layer from claim 20;

In claim 36, line 1, insert --said-- after "wherein" to particularly point out that the at least one layer is the at least one layer from claim 20; and

In claim 38, line 1, insert --said-- after "wherein" to particularly point out that the thermal treatment is the thermal treatment from claim 20.

Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 20-39 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 20 is rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting an essential element, such omission amounting to a gap between the elements. See MPEP § 2172.01. The omitted element is: Claim 20 does

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not particularly point out that the specific sheet resistance corresponds to that of the at least one layer (see lines 4-6).

Claim 25 recites the limitation "said time interval" in line 1. There is insufficient antecedent basis for this limitation in the claim because it does not particularly point out if the time interval is the second time interval or the third time interval from claim 20.

Claims 21-39 are rejected under 35 U.S.C. 112, second paragraph, because they depend on claim 20.

### ***Claim Rejections - 35 USC § 102***

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 20-22, 24, 26, 35, 38-39 are rejected under 35 U.S.C. 102(b) as being anticipated by Khan et al.

Referring to Fig. 2 and column 3, line 24 to column 4, line 24, Khan et al. disclose a rapid thermal annealing process for activating nitrogen acceptors in a zinc selenide layer (i.e. a II-VI compound semiconductor). A lamp annealing system is used to reach a peak temperature of 950 degrees C in about 5 seconds and is then turned off to allow cooling below 200 degrees C in less than 25 seconds for a total annealing time of about

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30 seconds (see column 3, line 65 to column 4, line 3). A silicon dioxide capping layer is essential to this process for preventing out-diffusion of zinc and selenium (see column 3, lines 43-44), implying that the 950 degrees C peak temperature is above the decomposition temperature of zinc selenide. Additional RTA profiles indicate that the nitrogen impurities begin to become active as acceptors at about 700 degrees C (see column 4, line 65 to column 5, line 6). It is further noted that the lamp would be a source of electromagnetic radiation while it is turned on, that is, during the first 5 seconds of the above-described RTA process.

These are all of the limitations set forth in claims 20-22, 24, 26, 35, 38-39 of the applicant's invention.

### ***Conclusion***

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Nakamura et al. teach annealing of magnesium-doped gallium nitride layers in a pressurized nitrogen atmosphere to prevent decomposition of the gallium nitride. Amano et al. teach electron beam irradiation of magnesium-doped gallium nitride layers to activate the magnesium.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stephen W. Smoot whose telephone number is 703-305-0168. The examiner can normally be reached on M-F (8:00am to 4:30pm).

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carl Whitehead, Jr. can be reached on 703-308-4940. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9318 for regular communications and 703-872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

SWS  
July 8, 2003

  
CARL WHITEHEAD, JR.  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2800